

## **Chernobyl Documentary Introduction**

**Description of incident**

**Description of response**

**Purpose of documentary**

**Introduce participants**

In the early morning hours of April 24, 1986, the Chernobyl nuclear plant near the town of Pripyat in what is now the Ukraine, experienced the worst nuclear power accident in history, an uncontrolled nuclear reaction and resulting explosion and fire, which sent a cloud of radioactive material over the western Soviet Union and Europe. The Chernobyl nuclear plant is located near the border of Russia, Ukraine, and Belarus, about 70 miles northwest of the City of Kiev, the nearest major population center. Kiev had a population of about 2.5 million at the time of the disaster. The town of Pripyat is located about 2 miles from the reactor and had a population of about 45,000 people at the time of the accident.

The exact cause of the accident is still uncertain, but it is widely accepted that a combination of design flaws and operator error caused the accident. At around 1:00 AM on April 24, the plant was conducting a safety test to determine if the cooling system pumps could operate by using the reactor turbine if the external electricity supply failed. According to the generally recognized account of the incident, operators powered down the reactor by inserting control rods into the core to create the low power conditions required for the test. However, the power decrease was greater than anticipated, and the operators later increased the power output by manually removing some of the control rods. In addition, the operators disabled an automatic shutdown system as a part of the test. Within seconds of withdrawing the control rods, power in the reactor shot up to dangerous levels, vaporizing water in the reactor and creating an energy spike. Operators reacted by attempting to reinsert the control rods, but due to the power spike in the reactor, the rods shattered and could not be lowered any further to control the reaction.

The cooling water vaporized within seconds, causing a steam explosion that blew the lid off the reactor. The sudden inrush of oxygen caused a graphite fire, and the ruptured reactor core and building burned and released radioactive isotopes onto the atmosphere for 10 days. The Chernobyl incident released more than 100 times the radioactivity released by the bombing of Hiroshima, and the radioisotopes traveled upward into the atmosphere and to the northwest with the prevailing winds. Deposition of the radioactive fallout cloud was irregular, and strongly influenced by rainfall.

Response to the disaster was disorganized, improvised, and chaotic. The first on the scene were local firefighters and soldiers who were not aware of the grave threat of exposure to radioactivity. Many of these heroic firefighters and soldiers died of radioactivity poisoning within hours or days.

At the time of the accident, Ukraine was part of the Soviet Union, and the Soviet Union was a closed society with centralized control of the press. Soviet premier Mikhail Gorbachev had taken office about 1 year earlier, and had not yet implemented his policy of Glasnost, or openness. The first public notice of the gravity of the situation came from Sweden, when workers at the Forsmark Nuclear Power Plant (approximately 700 miles away) detected elevated levels of radioactivity that were not from local sources on April 27. Soviet authorities either did not fully comprehend or

intentionally downplayed the severity of the accident. The evacuation of the town of Pripyat began at 2:00 in the afternoon of April 27, a full 36 hours after the accident. As late as May 1, major Soviet newspapers featured May Day celebrations rather than the Chernobyl disaster on their front pages, projecting an air of normality and muting the significance of the incident. Soviet premier Gorbachev did not appear on television to discuss the incident until May 14. An initial period of governmental silence, followed by reassuring comments, appears to have had the opposite effect to that which was intended.

The incident involved unprecedented radiological contamination of a huge inhabited area combined with a lack of reliable information from a closed society, which created suspicion, uncertainty, and inefficiency. What can we learn from the incident? A lot went wrong; what went right? How did miscommunication and a lack of communication affect public perception and willingness to alter their lives to accommodate the new reality? How did the decontamination of the area proceed and how did it facilitate rehabilitation the affected areas?

To examine these questions we have Vira Yakusha, Dr. Larisa Leonova, and Dr. John Cardarelli. Ms. Yakusha is an XXX, who was a mother with a young child, living in Kiev at the time of the accident. Dr. Leonova is a physical chemist, who was in the early wave of “liquidators”, who responded to the incident. Dr. Cardarelli is decontamination expert for USEPA. Together, we will examine the incident from several perspectives to see what we can learn from the response to the worst nuclear accident yet experienced, so that we are better able to deal with future radiological incidents.